

Claims

1. Method for routing of data packets,

5 comprising the steps:

(a) extracting a destination address identifier (ADR) from a data packet to be forwarded,

(b) comparing the destination address identifier (ADR) with entries of a routing table (4), each entry corresponding to a forwarding address available for routing, and

10 (c) if a correspondence between the destination address identifier (ADR) and one of the forwarding addresses stored in the routing table (4) is found in step (b), switching the data packet to an output link (OUT) associated with the respective forwarding address matching the destination address identifier,

characterized in that before carrying out said step (b), the extracted destination address identifier (ADR) is compressed according to a data compression algorithm, and the forwarding addresses are compressed according to the same data compression algorithm and stored in the routing table (4), and in said step (b), the compressed address destination address identifier is compared with the compressed forwarding addresses stored in the routing table (4).

2. Method according to claim 1,

characterized in that the data compression algorithm is a lossless data compression algorithm which eliminates redundancy in the destination address identifier and the forwarding addresses, respectively, without losing any information content.

3. Method according to claim 2,

35 characterized in that

the data compression algorithm is selected from a group comprising Huffman algorithms, Arithmetic algorithms, and Lempel-Ziv algorithms.

- 5 4. Method according to any one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
at least one parameter of the data compression algorithm is
adjusted in dependence upon data characteristics of the
destination address identifier (ADR).

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5. Method according to any one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
the forwarding address matching the destination address
identifier is determined taking into account a similarity
15 between the destination address identifier and a destination
address identifier of a preceding data packet.

6. Method according to any one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
20 the data compression algorithm uses a code table which
assigns a code word to a symbol of the destination address
identifier (ADR) and a symbol of each forwarding address,
respectively.

- 25 7. Method according to claim 6,
c h a r a c t e r i z e d i n t h a t
each symbol of the destination address identifier (ADR) and
each symbol of a forwarding address, respectively, comprises
a plurality of bits of the destination address identifier
30 (ADR) and a plurality of bits of the forwarding address,
respectively.

8. Method according to claim 7,
c h a r a c t e r i z e d i n t h a t
35 each symbol of the destination address identifier (ADR) and
each symbol of the forwarding addresses comprises four

successive bits of the destination address identifier and the forwarding address, respectively.

9. Method according to any one of claims 6-8,
5 c h a r a c t e r i z e d i n t h a t
the data compression algorithm is such that it assigns a code word to each symbol of the destination address identifier and to each symbol of the forwarding addresses, respectively, the length of which being inversely proportional to the
10 appearance probability of the symbol in a given address table.

10. Method according to any one of claims 6-9,
c h a r a c t e r i z e d i n t h a t
15 the data compression algorithm is such that it assigns the code word to each symbol of the destination address identifier and of the forwarding addresses, respectively, depending on the appearance probability of the respective symbol in the destination address identifier of an input data
20 packet.

11. Method according to any one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
the method is used for the routing of IPv6 data packets.
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12. Routing apparatus for routing of data packets,
comprising:
extraction means (2) for extracting a destination address
identifier (ADR) from a data packet to be forwarded,
30 routing table storing means (4) for storing a plurality of entries, each entry corresponding to a forwarding address available for routing,
a routing unit (3) for comparing the destination address
identifier (ADR) with the entries stored in the routing table
35 storing means (4) for finding a correspondence between the destination address identifier (ADR) and one of the forwarding addresses, and

switch means (6) for switching the data packet to an output link (OUT) associated with the respective forwarding address matching the destination address identifier (ADR),

c h a r a c t e r i z e d i n t h a t

5 first address compression means (7) are provided for compressing the destination address identifier (ADR) extracted by the extraction means (2) according to a data compression algorithm, and
second data compression means (8) are provided for
10 compressing the forwarding addresses according to said data compression algorithm and storing the compressed forwarding addresses in the routing table storing means (4),
the routing unit (3) being configured such that it compares
the compressed destination address identifier with the
15 compressed forwarding addresses stored in the routing table storing means (4).

13. Routing apparatus according to claim 12,

c h a r a c t e r i z e d i n t h a t

20 the first and second address compression means (7, 8) are configured such that they use a lossless data compression algorithm which eliminates redundancy in the destination address identifier and the forwarding addresses,
respectively, without losing any information content.

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14. Routing apparatus according to claim 13,

c h a r a c t e r i z e d i n t h a t

the first and second address compression means (7, 8) are configured such that they use a data compression algorithm
30 being selected from a group comprising Huffman algorithms, Arithmetic algorithms, and Lempel-Ziv algorithms.

15. Routing apparatus according to any one of claims 12-14,

c h a r a c t e r i z e d i n t h a t

35 compression parameter adjusting means (9) are provided for adjusting at least one parameter of the first and second address compression means (7, 8) in dependence upon data

characteristics of the destination address identifier (ADR) extracted by the extraction means (2).

16. Routing apparatus according to any one of claims 12-15,
5 c h a r a c t e r i z e d i n t h a t
there is a feedback connection between the routing unit (3) and the first address compression means (7) for eliminating redundancy in the time domain.
- 10 17. Routing apparatus according to any one of claims 12-16,
c h a r a c t e r i z e d i n t h a t
the routing apparatus is configured for carrying out the method for routing of data packets according to any one of
claims 1-11.
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